Environment

Air Emissions Trading Project

Major Feasibility Study

Terms of Reference

June 20, 2002

Emissions Trading Project Objectives

Alberta Environment (AENV) is commissioning consultant studies on the potential for Alberta-based air emissions (air pollutants and greenhouse gases) trading and setting related air management objectives and targets on a broad basis. This Alberta Emissions Trading Project has three major objectives:

(1) To explore the potential of emissions trading and related broad air management objectives as a system to more cost-effectively meet Alberta's environmental air quality objectives for government and the private sector and to provide findings on the best options to take advantage of that potential. Such a system could include one or more air pollutants, and greenhouse gases, and could cover more than one sector.

(2) To provide findings on air emission management approaches that will be useful to the Clean Air Strategic Alliance (CASA) Electricity Project Team.

(3) To better position Alberta, following the submission of the CASA project team report in June 2003, to consider a possible decision on establishing an Alberta air emissions trading system.

The project includes 3 consultant studies, as well as internal studies and analysis:

(1) The CABREE Study – a report scoping the potential for greenhouse gas emissions trading in Alberta. Prepared by the Centre for Applied Business Research in Energy and the Environment (CABREE), this study is available on the project website: http://www3.gov.ab.ca/env/air/emissions_trading/index.html.

(2) The Jurisdictional Emissions Trading Review Study – This study, being undertaken by ICF Consulting, is examining relevant air pollutant and greenhouse gas trading systems in other jurisdictions to provide information and learnings useful to the project. This study will be completed and put up on the project website in early July 2002.

(3) The Major Feasibility Study – This is the largest study in the project. These Terms of Reference for the study have been prepared for the Request for Proposal process, which is now underway.

Study Objectives

The Major Feasibility Study has two major objectives:

To assess the potential of emissions trading and related broad air emission objectives for air borne pollutants (SOx, NOx, particulate matter, mercury and/or others as required[1]) and greenhouse gases (GHGs) to:

- In the case of airborne pollutants - improve air quality efficiently and cost-effectively for the private and public sectors.
- In the case of GHGs - complement through an analysis of emissions trading options and recommendations, the implementation of the GHG emission reduction goals and objectives in the Alberta Government's *Plan on Climate Change*. (The contractor is not expected to duplicate the efforts currently underway by the Government of Alberta in setting the environmental targets for GHG reductions across provincial sectors, but is expected to offer and examine innovative ideas on how the emissions trading

[1] It is expected that the contractor will incorporate other air borne pollutants or substances in their analysis if justified by environmental stresses in Alberta and if an opportunity in terms of a more efficient and effective response to those stresses is available.

system might work as an option that would be available as a complement to those planned sectoral agreements.)

To provide the Department of Environment with:

- Detailed analysis and identification of the potential and opportunity for Alberta-based air pollutant and GHG emissions trading.
- The best design options for a trading system(s) to take advantage of that opportunity.
- Recommended steps, from a technical perspective, to implement identified opportunities.

Process Requirements:

- Present on the Interim Report, answer questions and receive input from Alberta stakeholders and government officials and present on the Final Report and answer questions in a total of up to six (6) internal and external information and input or information sessions. These sessions are an integral part of this study, will serve as a communications tool, and in the case of the sessions on the Interim Report, will provide input that will assist the contractor in finalizing the report.
- Take into account and reflect relevant current developments in the report, including work being done by CASA, Climate Change Central, federal and national GHG emissions trading groups and any new developments for international GHG emissions trading.

Timelines

Study term:	September 2002*– February 2003
Interim Report	November 2002
Workshops on Interim Report:	November 2002
Draft Final Report	January 2003
Final report	Mid-February 2003

*Contract work may begin in August, depending on the date of finalization of the contract.

Deliverables

General

The contractor is expected to meet with representatives from Alberta Environment to initiate the work as soon as a contractual agreement to do so comes into effect. Also the contractor is expected to be in ongoing communication with the project manger and his delegates and to meet with representatives from Alberta Environment as needed at key points during the course of the project. The contractor shall be reasonably available for consultation either physically or electronically at the contract manager's discretion.

The contractor will be required to participate and make presentations at a total of up to six (6) information and input or information sessions with a variety of audiences external or internal to Alberta Environment.

Interim Report

The contractor shall deliver a written Interim Report in November 2002 and, on request, make up to three presentations at information and input sessions on that Interim Report in November 2002. The Interim Report shall provide the basis for the information and input sessions and must be made available to AENV at least one week before the sessions. The information and input sessions will by organised and paid for by AENV. However, all consulting, travel or other expenses related to the contractor's participation must be included in the bid price.

Final Report

The contractor shall deliver a final report by mid February 2003. The contractor shall deliver a draft of the final report to the department for review in January 2003. Upon request, the contractor shall make up to three presentations on the Final Report, with questions and answers, at information sessions in February or March 2003, following submission of the Final Report. If required, these information sessions will be organized and paid for by AENV. All consulting, travel or other expenses related to the contractor's participation must be included in the bid price.

Study Elements

The study will include, and can go beyond as required to meet the study objectives, the following elements:

Air Pollutants

Context

- The current regulatory framework, as established by the Alberta Environmental Protection and Enhancement Act (AEPEA), consists of regulating sources of pollution and limiting their impacts on the environment to a level that minimizes risks to human health and ecosystems.
- The present command-and-control approach uses approvals, strict emission limits, acceptable pollution control technology, prescribed operating guidelines and environmental impact assessments to ensure that Alberta's environmental objectives are met.
- The department develops Alberta's air quality management objectives through either the Clean Air Strategic Alliance (CASA) and/or directly with a stakeholder consultative process. Approvals and compliance staff implement these objectives.
- In writing the terms and conditions of approvals, the department is guided by ambient air quality policies, objectives, standards, guidelines, and codes of practice. In particular, the Industrial Release Limits Policy lays out how technology and ambient conditions are to be taken into account in setting approval release limits.
- The department is setting up electronic reporting mechanisms for source emissions and ambient air quality data.
- Some concerns have been raised about the timeliness and cost effectiveness of the approvals process. Alberta's rapidly expanding economy and the high environmental expectations of Albertans both place pressure on that process.

The department wants to know if emissions trading might be a viable and effective way to help meet the Alberta Government's environmental management objectives. If so, for what air pollutants would emissions trading be feasible? What are the strengths and weaknesses of different design options for a system or systems for various pollutants and what are the optimal design options from a technical perspective? What are the technical steps to implementation?

Requirements

1. Alberta emissions profile: regulated point sources

   Profile emissions from major currently regulated point sources within Alberta (including type of emissions, geographical distribution and intensity – input or output based and absolute per annum) in the past, present and projected into the future to the degree of detail needed to assess environmental stresses and assess the potential of emissions trading. The profile shall include individual facility emissions, operator aggregates, sector aggregates, geographical (point of origin) aggregates[2] and/or others as required.

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[2] Compiling information obtained from the department and other information the contractor may obtain is the sole responsibility of the contractor. Publication of information will be subject to any applicable AENV confidentiality or other obligations.

2. Alberta emissions profile: non-point sources

   Profile emissions from non-regulated or non-point sources to the degree of detail needed to meet the objectives of the study.

3. Stress on Alberta air quality

   Assess the contribution to stress on air quality made by emissions originating from within Alberta and from neighbouring jurisdictions. Place particular focus on the higher cumulative impact areas of Fort Saskatchewan, Fort McMurray, and West Central (including Lake Wabamun). Stress on air quality would encompass aggregate emissions, pressures on ambient air quality and other specific environmental challenges such as smog, ground level ozone and acid deposition[3].

4. Emission abatement cost structure

   Investigate and present to the degree of detail needed for the study, the cost of emission reductions for major regulated point-source Alberta facilities and operators. This shall take into account technological solutions and associated costs and/or other factors affecting a facility or operator's ability to reduce or sequester emissions.

5. Broad air management objectives

   Based on the current emissions profile, the current and reasonably-projected future stresses on Alberta's air quality and any other relevant considerations, assess the opportunity to achieve more environmentally and cost effective results through broad air management objectives. These would be applied to individual facilities or operators through emissions constraints associated with an emission trading system or systems. For air pollutants, review the advantages, disadvantages, and applicability in the Alberta context of different broad bases for setting objectives for each pollutant (e.g. on a sectoral basis, on an air shed basis, on a provincial or economic trading area basis). Suggest the best basis for the broad definition of air management objectives for each pollutant to improve air quality efficiently and cost-effectively for the private and public sectors.

6. The potential for air emissions trading; recommended design options

   Based on Alberta's current and reasonably-projected future emissions profile (points 1 and 2 above), the stresses on Alberta air quality (point 3 above), the abatement findings (point 4 above), the opportunity to achieve better environmental results cost-effectively through broad air management objectives (point 5 above), and any other relevant considerations, model and assess the potential for trading air pollutants as a management system to cost-effectively achieve improved environmental results. For each air pollutant for which the analysis suggests emissions trading would be a viable and beneficial option:

   - Discuss the advantages and disadvantages (including differing implementation and operating costs) of applicable design options and recommend and provide detail on the most appropriate design options, addressing but not being limited to:

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[3]The contractor is not expected to undertake a detailed assessment of environmental effects across the province that are associated with emissions of air pollutants. Rather, the contractor is expected to compile a view on stresses to the environment as determined in published studies or by using the emissions load as a proxy.

A. Type of system

   a. Cap and trade, baseline and credit or hybrid

      The study shall recommend a method to determine the level of the cap or the baseline associated with the recommended option and shall also identify options for the level of that cap or baseline. These optional levels shall be used in modelling the viability of the emissions trading system.

   b. Open or closed system

B. Type of cap or baseline

   a. Absolute or input or output-based

C. Sectors or entities allowed to trade and the basis on which they can trade; averaging among units within facility bounds or among facilities within organisational bounds at the operator level

D. Limits to trade and/or transfer coefficients and/or other options to address local environmental issues.

E. Initial allocation and other issues associated with the introduction of such instruments and all related issues such as revenue recycling and growth or barriers to entry

   a. Gratis (including grandfathering) or auction

   b. At the operator or at the facility level

F. Banking and associated discounting as appropriate

G. Borrowing from forward periods

H. Length of compliance period and instrument life span

I. Enhancements to the viability of the market system through derivatives and other instruments (describe)

Use the following criteria in assessing the design options:

   b. Environmental Integrity: the effectiveness in achieving environmental air quality objectives.

   c. Economic Efficiency and Impacts: greatest economic efficiency and least operating costs to participants and government consistent with ensuring the integrity and effectiveness of the trading system and the achievement of environmental management objectives.

   d. Implementation Costs: lowest implementation costs consistent with ensuring the integrity and effectiveness of the trading system and the achievement of environmental management objectives.

   e. Stakeholder Acceptability: highest potential acceptability of the option by industry, ENGOs and other stakeholder groups in Alberta consistent with ensuring the integrity and effectiveness of the trading system and the achievement of environmental management objectives.

   f. Simplicity and transparency: design options that are as straightforward and transparent as possible consistent with ensuring the integrity and effectiveness of the trading system and the achievement of environmental management objectives.

7. Implications of the recommended option

   Assess and outline any relevant implications of the recommended trading option(s), including:

   a. Economic and allocative efficiency

   b. Estimated economic effects and outcomes by sector, including any significant wealth or monetary transfers among sectors of the economy

   c. Expected environmental outcomes locally and provincially

8. Recommended implementation steps

   Recommend steps from a technical perspective to implement the recommended trading option if a decision were made to implement it.

   - Outline implementation challenges and recommend options to address them.
   - Consider the desirability of a phased or staged introduction of the trading option as required.
   - Identify useful and or necessary external linkages to other regulatory systems under development or in place.

9. Implementation and operating costs

   Estimate implementation and operating costs of the recommended system(s) for both the government and the private sector.

10. Linkages

    It is assumed that different trading systems with different design elements will likely be required for GHG's and air pollutants. Design elements for the trading of various air pollutants may vary as well. Discuss and provide findings and suggestions on any desirable linkages among those possible differing trading systems and on possible linkages with systems outside Alberta. Where applicable, address trading and fungibility issues.

Greenhouse Gases (GHGs)

Context

- The GHG component of this proposal is unique and will be guided by a framework based on Alberta's policy position on climate change, as set out in the Alberta Strategy and Action Plans (http://www3.gov.ab.ca/env/climate.html).
- The contractor's work must be consistent with the Alberta policy.
    - Discussed in further detail below, the Alberta climate change plan sets out:
        - An overall provincial emissions intensity (emissions per unit of GDP) target for the province
        - Sectoral emissions objectives (could be absolute, intensity-based or other) through the use of sectoral partnership agreements.
    - The primary GHG contribution of this study is to assess how emissions trading could complement and serve to enhance these identified objectives.
- A key focus of the Alberta plan is on technology innovation, development and investment. The Alberta government supports the use of emissions trading to provide additional flexibility to firms in achieving emission objectives rather than as the central feature of an emissions reduction approach for sectors or the province overall. In the context of GHGs, Alberta is looking for the development of an approach to emissions trading that complements the focus of technology development (versus heavy reliance on allowance or credit purchases), reflects Alberta's unique needs and circumstances, addresses competitiveness concerns - largely in the energy sector - and works with national, continental and international trading systems. This shall be the major focus of the contractor's work in this area.
- Alberta is concerned with approaches that set arbitrary targets, beyond what can reasonably be achieved in the sector, that might force the purchase of entitlements from other sectors, regions or countries – essentially removing capital from those sectors rather than helping them to retool. In principle, Alberta supports a flexible international trading system with full and low cost access to emissions reductions throughout the world. Alberta would be concerned about any trading system that would result in a wholesale transfer of value outside Alberta and Canada. We believe that the key is to not operate in a Kyoto timeframe.
- Alberta's overall GHG emission intensity goal for the province has been set out in the Alberta Action Plan on Climate Change and does not require refinement by the contractor. The goal is: *In consultation and cooperation with all Albertans, reduce greenhouse gas emissions intensity, or emissions relative to GDP, by 50 per cent by the year 2020. For Alberta-based consumption, this will work out to about the equivalent of 10 per cent below 1990 emission levels.*
- Alberta industry, municipalities, and consumer organizations are looking for an overall framework under which they can take actions to reduce greenhouse gas emissions and reduce economic and environmental risks. Alberta's approach is to work with sectors to develop realistic reduction objectives and action plans so that the sectors become both more competitive and lower emitting.

- The Alberta Action Plan outlines a process in which the Alberta Government will negotiate sectoral agreements to ensure that all major emission sources in the province are covered. We will facilitate and negotiate agreements with specific economic sectors, including electricity, oil and gas, transportation, forestry, municipalities and other industries to gain commitments to action to reduce greenhouse gas emissions.
- Under the Action Plan, Alberta will require reporting of greenhouse gas emissions by large sources in Alberta, allowing the province to develop a stronger understanding of the nature of its greenhouse gas emission sources. Greenhouse gas reporting will also help industry better manage its own emissions and will be a foundation for any emissions trading system.

Requirements

1. GHG Inventory

   Profile emissions from Alberta's sectors (with a particular focus on those sectors that will undertake partnership agreements with the Alberta government under the Climate Change Action Plan) and, where possible, from facilities in Alberta, with regard to type of GHG emissions, geographical distribution and intensity (output based and absolute per annum) in the past, present and projected into the future to the degree of detail needed to meet the study objectives.

2. The Definition of Sectors

   Taking the level of aggregation for a GHG emissions trading system as sectoral, explore alternative approaches to defining sectoral boundaries (for example, should all provincial oil and natural gas producers be treated as a sector, or are the oil sands producers a sector in and of themselves?). Suggest, according to the analysis above, appropriate definitions of sectors for the purpose of meeting Alberta's overall provincial target.

3. Instrument Options

   Discuss the advantages and disadvantages (including differing implementation and operating costs) of applicable design options that could be used to implement the trading element of Alberta's Climate Change Action Plan and recommend and provide detail on the most appropriate design options, according to the following criteria:

   - Consistent with the Alberta Plan. The design of any system must be compatible with meeting Alberta's overall intensity target for the province, as well as the development of sectoral emissions intensity agreements. The focus on intensity versus absolute targets should not preclude the possibility of absolute capped system designs, so long as they are consistent with the objectives and intent of the Alberta Plan. Creative options are desirable.
   - Economic Efficiency and Impacts: greatest economic efficiency and least operating costs to participants and government consistent with ensuring the integrity and effectiveness of the trading system and the achievement of environmental management objectives.

- Implementation Costs: lowest implementation costs consistent with ensuring the integrity and effectiveness of the trading system and the achievement of environmental management objectives.
- Stakeholder Acceptability: highest potential acceptability of the option by industry, ENGOs and other stakeholder groups in Alberta consistent with ensuring the integrity and effectiveness of the trading system and the achievement of environmental management objectives.
- Simplicity and transparency: design options that are as straightforward and transparent as possible consistent with ensuring the integrity and effectiveness of the trading system and the achievement of environmental management objectives.

Specifically with regard to GHG emissions trading, in the context of the Alberta Climate Change Action Plan, and recognizing the absence of specific potential targets, the design options shall address:

1. Type of System
    a. Cap and trade, baseline and credit, hybrid options
    b. Open or closed system;
        - Define sectors or entities allowed to trade and the basis on which they can trade; averaging among units within facility bounds or among facilities within organisational bounds at the operator level
        - With respect to an open system, the contractor shall explore the role for offset creation and use, including, but not limited to offset creation opportunities within Alberta, nationally and internationally.
2. Type of environmental objectives for sectors (cap or baseline)
    a. Absolute, output-based, or hybrid options (within and across sectors), all within an overall provincial emission intensity-based goal.

        With respect to output-based approaches, the assessment shall include, but not be limited to, an exploration of alternative metrics of emissions intensity (e.g. emissions per physical unit of production, emissions per unit of GDP, etc.) that have been examined or implemented (e.g. the UK trading system) elsewhere, and may be relevant for Alberta.

    b. Uncapped sectors
3. Initial allocation and issues associated with the introduction of such instruments and all related issues such as revenue recycling and growth or barriers to entry
    a. Gratis (including grandfathering) as opposed to auction
    b. At the operator or at the facility level
4. Banking and associated discounting as appropriate
5. Length of compliance period and instrument life span
6. Enhancements to the viability of the market system through derivatives and other instruments

4. Linkages to Air Pollutants

   Examine the potential for fungibility and tradability between GHGs and other air pollutants, including pros, cons, and other issues, such as those related to general feasibility and environmental integrity.

5. Linkages to other trading systems and designs

   - In detail, examine issues relating to how options being considered under Alberta's GHG trading system might be recognized and tradable throughout Canada, the US and the world – fungibility.
   - Consider how an Alberta intensity-based GHG trading system might make a transition to and/or link up to a broader based GHG absolute cap trading system in the future if that were seen as desirable, including the fungibility of allowances or credits created under an Alberta-based system.

6. Recommended Implementation Steps

   Recommend steps from a technical perspective to implement the recommended trading option if a decision were made to implement it.

   - Outline implementation challenges and recommend options to address them.
   - Consider the desirability of a phased or staged introduction of the trading option as required.
   - Identify useful and or necessary external linkages to other regulatory systems under development or in place.
   - Estimate implementation and operating costs for both the government and the private sector.

Relevant publicly available information sources include:

Source of Information	Information type	Comments/location
Canada's Emission Outlook: An Update.	GHG inventory and economic data (including forecasts) Emission intensity factors	The emissions forecast of the CEOU was updated further in 2002. This information is available from the Climate Change Branch, Alberta Environment
Voluntary Challenge and Registry (Organized by sector/company/province)	GHG emission profile including reduction activities Forecasts of emissions	http://www.vcr-mvr.ca/

Environment Canada GHG Inventory	GHG inventory (no forecasts) Contains some methodology Breakdown by sector	http://www.ec.gc.ca/pdb/ghg/1990_99_report/foreword_e.cfm http://www.ec.gc.ca/pdb/ghg/ghg_docs_e.cfm
Energy and Utilities Board (ST 98)	Alberta's fossil fuel supply and disposition (including forecasts)	www.eub.gov.ab.ca
Department of Energy	General statistics on natural gas, electricity, oil and oil sands	http://www.energy.gov.ab.ca/com/default.htm
Environmental Impact Assessments	Production process GHG contribution Total production Geographic Location	Government of Alberta (Environment or Energy Libraries)
National Energy Board-Energy Supply and Demand Outlook to 2020	Energy supply and demand	
CAPP Pub.# 1999-0009-12	Inventory of CH4 and VOC Emissions from upstream O&G sector	Canadian Association of Petroleum Producers
Statistics Canada – Catalogue no. 57-003-XPB and 26-006-XPB	Energy production and disposition (by sector and region)	Contact: Statistics Canada
Greenhouse gas emission reduction cost curve analysis completed under the National Climate Change Process	Sectoral, regional and national cost curves of greenhouse gas abatement in Canada	Contact: Climate Change Branch Alberta Environment (780) 415-8183